

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

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1-23 (canceled).

24. (currently amended): A process for fabricating a computer-generated hologram by defining a range which diffraction light obtained by diffraction of incident light leaves, determining a hologram phase distribution for allowing said diffraction light to leave the defined range,

quantizing a determined phase distribution to find a quantized depth of a hologram relief, forming a relief on a substrate by photoetching on the basis of a found quantized depth to obtain a relief pattern, and

patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer;

wherein said phase distribution is determined per minute elemental hologram piece forming the hologram, and said relief is formed on the basis of a phase distribution obtained by repeatedly arranging a phase distribution of said elemental hologram piece across said substrate.

25. (currently amended): A process for fabricating a computer-generated hologram by defining a range which diffraction light obtained by diffraction of incident light leaves, determining a hologram phase distribution for allowing said diffraction light to leave the defined range,

quantizing a determined phase distribution to find a quantized depth of a hologram relief and the number of steps of said depth,

repeating photoetching given times corresponding to an obtained depth and the number of steps to form a relief pattern on an etching substrate, and

patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer;

wherein said phase distribution is determined per minute elemental hologram piece forming the hologram, and said relief is formed on the basis of a phase distribution obtained by repeatedly arranging a phase distribution of said elemental hologram piece across said substrate.

26. (canceled).

27. (previously presented): The computer-generated hologram fabrication process according to claim 24, wherein an optical reflective layer is laminated on and along a relief side or other side of said resin layer.

28-40. (canceled).

41. (previously presented): The computer-generated hologram fabrication process according to claim 25, wherein an optical reflective layer is laminated on and along a relief side or other side of said resin layer.

42. (currently amended): The computer-generated hologram fabrication process according to claim 2624, wherein an optical reflective layer is laminated on and along a relief side or other side of said resin layer.

43. (previously presented): The computer-generated hologram fabrication process according to claim 25, wherein the number of steps L having the depth of said relief is the N-th power of 2 where N is the number of photoetching cycles.

44. (currently amended): The computer-generated hologram fabrication process according to claim 2624, further comprising quantizing the determined phase distribution to find the number of steps of said quantized depth, and repeating photoetching given times corresponding to the obtained depth and the number of steps to form the relief pattern on the substrate, wherein the number of steps L having of the depth of said relief is the N-th power of 2 where N is the number of photoetching cycles.

45. (currently amended): The computer-generated hologram fabrication process according to claim 27, further comprising quantizing the determined phase distribution to find the number of steps of said quantized depth, and repeating photoetching given times corresponding to the obtained depth and the number of steps to form the relief pattern on the substrate, wherein the number of steps L having the depth of said relief is the N-th power of 2 where N is the number of photoetching cycles.

46-51. (canceled).

52. (previously presented): The computer-generated hologram process of claim 24, wherein the step of patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer includes pressing the relief pattern against the resin layer, and then curing the resin layer.

53. (previously presented): The computer-generated hologram process of claim 25, wherein the step of patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer includes pressing the relief pattern against the resin layer, and then curing the resin layer.

54. (new): A process for fabricating a computer-generated hologram by defining a range which diffraction light obtained by diffraction of incident light leaves,

determining a hologram phase distribution for allowing said diffraction light to leave the defined range,

quantizing a determined phase distribution to find a quantized depth of a hologram relief and the number of steps of said depth,

repeating photoetching given times corresponding to an obtained depth and the number of steps to form a relief pattern on an etching substrate, and

patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer;

wherein the number of steps L having the depth of said relief is the N-th power of 2 where N is the number of photoetching cycles.

55. (new): A process for fabricating a computer-generated hologram by defining a range which diffraction light obtained by diffraction of incident light leaves, determining a hologram phase distribution for allowing said diffraction light to leave the defined range,

quantizing a determined phase distribution to find a quantized depth of a hologram relief and a number of steps of said depth,

forming a relief on a substrate by photoetching on the basis of a found quantized depth to obtain a relief pattern, and

patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer;

wherein said relief is formed on the basis of a phase distribution obtained by repeatedly arranging a phase distribution of an elemental hologram piece across said substrate.

56. (new): The process for fabricating a computer-generated hologram according to claim 55, wherein the number of steps L having the depth of said relief is the N-th power of 2 where N is a number of photoetching cycles performed.

57. (new): The process for fabricating a computer-generated hologram according to claim 55, further comprising:

quantizing the determined phase distribution to find the number of steps of said quantized depth, and

repeating photoetching given times corresponding to the obtained depth and the number of steps to form the relief pattern on the substrate.

58. (new): The computer-generated hologram process of claim 55, wherein patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer includes pressing the relief pattern against the resin layer, and then curing the resin layer.

59. (new): A process for fabricating a computer-generated hologram by defining a range which diffraction light obtained by diffraction of incident light leaves, determining a hologram phase distribution for allowing said diffraction light to leave the defined range,

quantizing a determined phase distribution to find a quantized depth of a hologram relief and a number of steps of said depth,

forming a relief on a substrate by photoetching on the basis of a found quantized depth to obtain a relief pattern, and

patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer;

wherein the number of steps L having the depth of said relief is the N-th power of 2 where N is a number of photoetching cycles.

60. (new): The process for fabricating a computer-generated hologram according to claim 59, further comprising:

quantizing the determined phase distribution to find the number of steps of said quantized depth, and

repeating photoetching given times corresponding to the obtained depth and the number of steps to form the relief pattern on the substrate.

61. (new): The computer-generated hologram fabrication process according to claim 59, wherein an optical reflective layer is laminated on and along a relief side or other side of said resin layer.

62. (new): The computer-generated hologram process of claim 59, wherein the step of patterning a resin layer using said relief pattern to form a hologram relief on a surface of said resin layer includes pressing the relief pattern against the resin layer, and then curing the resin layer.